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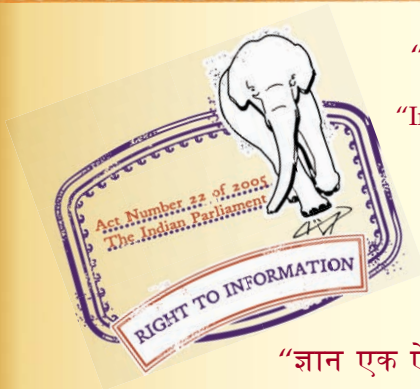
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IS 7768 (1975): Method for sensory evaluation of milk [FAD
19: Dairy Products and Equipment]



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Bhartrhari—Nitiśatakam

“Knowledge is such a treasure which cannot be stolen”

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Indian Standard
METHOD FOR
SENSORY EVALUATION OF MILK

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Indian Standard

METHOD FOR SENSORY EVALUATION OF MILK

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Indian Standard

METHOD FOR SENSORY EVALUATION OF MILK

0. FOREWORD

0.1 This Indian Standard was adopted by the Indian Standards Institution on 29 August 1975, after the draft finalized by the Sensory Evaluation Sectional Committee had been approved by the Agricultural and Food Products Division Council.

0.2 Evaluation of quality of raw milk, fresh pasteurized milk and heated milk by chemical means confronts two major problems—firstly, all chemical constituents attributing to flavour of milk have not yet been identified and, secondly, milk flavour constituents in view of their having several components are difficult to analyse. Considering that sensory evaluation provides an integrated assessment of milk quality and is applied for acceptance or rejection of milk by the purchaser, this standard has been evolved to unify the approach to sensory analysis on scientific lines. It is expected that this standard will help in training the personnel and in establishing more uniform criteria for acceptance of milk by purchasers.

0.3 This standard is complimentary to IS : 1479 (Part II) - 1961*.

1. SCOPE

1.1 This standard prescribes conditions, technique, method and evaluation card for sensory evaluation of milk.

2. TERMINOLOGY

2.1 For the purpose of this standard, the following definitions, in addition to those given in IS : 5126 (Part I) - 1969† and IS : 5126 (Part II) - 1969‡ shall apply.

2.1.1 *Barny*—Flavour defect associated with poor ventilation of stable, improper feeding routine and physical contamination with barn refuses either singly or in combination. This is also associated with cowy.

*Method of test for dairy industry: Part II Chemical analysis of milk.

†Glossary of general terms for sensory evaluation of foods: Part I Methodology.

‡Glossary of general terms for sensory evaluation of foods: Part II Quality characteristics.

2.1.2 Cowy — Associated with certain diseases of animals, such as mastitis, ketosis, digestive upsets or sometimes due to post-colostrum milk.

2.1.3 Curdy — Presence of suspended particles of coagulated casein giving a look of curdy milk.

2.1.4 Feed — Flavour defect caused by spring-time feeding of certain grasses or green fodder mixture where clover may be predominant. This is similar to cowy taint but more objectionable.

2.1.5 Neutralized — When high acid milk is neutralized with sodium carbonate group of neutralizer, milk develops flavour reminiscent of soap.

2.1.6 Ropy — Body defect indicated by formation of string-like structures while drawing a column of milk with a spatula or glass rod. This is of bacterial origin and is associated with *Alcaligenes viscosus* which develops during prolonged storage at cold storage temperature (10°C) of milk either unhygienically produced or contaminated milk.

2.1.7 Unclean — A flavour defect associated with growth of organism of bacillus and coliform group. Sometimes this flavour may be indicative of ropiness or sliminess in milk. It is very often caused by use of improperly cleaned vessels, dirty pipelines and sometimes due to unclean vats.

3. GENERAL TEST CONDITION

3.1 The general conditions for testing of milk shall be as given in IS: 6273 (Part I)-1971*.

4. PANELISTS

4.1 Selection of Panelists — Persons with normal sensitivity for basic taste and odour should be selected. They should be further trained in identification and detection of defects and estimation of quality attributes.

4.1.1 The panelists should have an ability to detect small differences between paired samples. They should be able to recognize the following solutions of primary stimuli:

Sucrose	0.5 percent
Sodium chloride	0.15 percent
Citric acid, monohydrate	0.06 percent
Quinine sulphate	0.005 percent

*Guide for sensory evaluation of foods: Part I Optimum requirements.

4.1.2 Panelists should possess an ability to distinguish and discriminate between solutions of various concentrations. For instance, four aqueous solutions of sucrose at 5.0, 7.5, 10.0 and 12.5 percent. Selection among the available panelists should be based on significant capacity to distinguish quality variations, odours and other attributes. Those who dislike milk or milk products should be excluded from the panel.

NOTE — A separate detailed Indian Standard covering all aspects of panel selection is under preparation.

4.2 Training

4.2.1 Preparation of Milk Samples for Training — A control sample of milk free from objectionable flavour, appearance and colour defects should be served along with samples having following defects:

- a) *Acidic* — Prepare milk samples with varying lactic acidity by incubating fresh milk at 37°C for varying periods so as to produce 0.15, 0.18, 0.2 and 0.25 percent acidity. Milk samples with developed acidity should be chilled to arrest further increase in acidity. Samples so prepared should be presented at 40°C to the panelists.
- b) *Sunlight* — Expose capped sample bottles to direct sunlight ranging from 30 minutes to 3 hours to develop varying intensities of sunlight flavour defect.
- c) *Oxidized* — Prepare milk samples with this defect by bubbling oxygen gas from a cylinder for 10, 15 and 20 minutes or alternatively by blowing air into a series of bottles of milk with the help of a rubber blower. The bottles should be stored at 37°C prior to training session.
- d) *Barny* — Expose milk sample to barn conditions for 10, 20, 30 and 40 minutes. Cap and store at 5°C. Bring the sample temperature to 40°C before presenting to the panelist.
- e) *Burnt* — Boil a small quantity of milk for 15 minutes. Add aliquot portions from this overheated milk ranging from 5 to 25 percent to milk to develop different levels of burnt flavour.
- f) *Adulterated* — Since water is a common adulterant of milk, mix samples of milk with 10, 20 and 30 percent of distilled water and present to the trainees for sensing common variations in the appearance, flavour and viscosity.
- g) *Metallic* — Prepare a 0.3-percent solution of ferrous sulphate in distilled water. To each bottle of 500 ml milk add 0.5, 1.0 and 2 ml of ferrous sulphate solution to simulate varying degree of metallic taint.

4.2.2 Procedure for Training— The panelists should be familiarized with all desirable and undesirable (see 4.2.1) characteristics. The common undesirable characteristics may be lactic acidic, weedy, feed, barny, oxidized and burnt flavours; ropiness and other microbial defects; sediments, adulterant, neutralizers and foreign matter. A series of 20 judgements shall be obtained from each prospective panelist utilizing a pair of sample with known differences. To compensate for the known variations from day to day, a qualifying test should be given for a 3-day period. Those who make an acceptable (75 percent correct) scores should be chosen.

4.2.3 The panelists should be checked once in 3 months for their consistency and acuity.

4.3 Number of Panelists— Five to seven trained panelists should be employed in evaluations to arrive at consistent and statistically valid results. At least 10 judgements should be taken.

5. SAMPLING, PREPARATION AND PRESENTATION

5.1 Sampling— A representative sample should be drawn from a lot. Precautions should be taken to avoid an extraneous contamination in drawing, handling and preservation of samples.

5.2 Presentation of Samples— Samples should be presented in tasting glasses. In case of pasteurized milk for testing sediment, temperature, etc, a sealed bottle should be used. The milk should be warmed up to 40°C for evaluation of taste, odour and aroma.

NOTE— A separate Indian Standard on tasting glass for liquid samples is under preparation.

5.3 Amount of Each Sample— A sample of 50 ml should be sufficient for the test.

5.4 Number of Samples— The number of samples in one session should not exceed 5.

5.5 Coding— Coding of samples should be done as recommended in 7 of IS : 6273 (Part I)-1971*.

6. PROCEDURE

6.1 Technique of Evaluation— The sensory evaluation should always start with the visual examination of the sample. Appearance and sediment should be evaluated first. The sample should then be warmed to 40°C for evaluation of flavour and odour.

*Guide for sensory evaluation of foods : Part I Optimum requirements.

6.2 Method — Follow composite scoring method as given in 4.2.8 of IS : 6273 (Part II)-1971*.

6.3 Evaluation Card — Use the evaluation card given in Table 1 for recording the observations of the panelists. Calculate final score by deducting the score under section B from score under section A.

TABLE 1 EVALUATION CARD FOR MILK

Name Date

Type of Milk..... Date

A. Assign scores for each sample for different characteristics

CHARACTERISTIC	MAXIMUM SCORE	SAMPLE SCORE
i) Colour and appearance	10	
ii) Odour	20	
iii) Flavour	40	
iv) Body	30	

B. Indicate the degree of defects such as the following. Encircle the one applicable and deduct from appropriate attributes.

CHARACTERISTIC	DEFECT	DEGREE OF DEFECT		
		Suspicion	Slight	Pronounced
i) Colour and appearance	{ Suspended particles, filth, foreign matter, bloody	2	4	10
ii) Odour	Stale, acidic abnormal	5	10	15
iii) Flavour	{ Cooked, oxidized, rancid, metallic, neutralizer, feed, barny, cowy, flavour defects due to adulterants and other additives	5	10	20
iv) Body	Watery, ropy, curdy	5	10	15

*Guide for sensory evaluation of foods: Part II Methods and evaluation cards.

IS: 7768 - 1975

6.4 Grading — After computation of data (recorded in Table 1 by the panelist) the following grades should be awarded. Any attribute showing pronounced defect should be graded poor and rejected.

<i>Quality</i>	<i>Scores</i>	<i>Grade</i>
Excellent	90 and above	A
Good	80 to 89	B
Fair	60 to 79	C
Poor	59 and below	D

7. STATISTICAL EVALUATION OF RESULTS

7.1 For the purpose of statistical analysis of data, one of the statistical techniques mentioned under **4.2.8.4** of IS : 6273 (Part II)-1971* should be adopted.

*Guide for sensory evaluation of foods: Part II Methods and evaluation cards.

INTERNATIONAL SYSTEM OF UNITS (SI UNITS)

Base Units

Quantity	Unit	Symbol
Length	metre	m
Mass	kilogram	kg
Time	second	s
Electric current	ampere	A
Thermodynamic temperature	kelvin	K
Luminous intensity	candela	cd
Amount of substance	mole	mol

Supplementary Units

Quantity	Unit	Symbol
Plane angle	radian	rad
Solid angle	steradian	sr

Derived Units

Quantity	Unit	Symbol	Definition
Force	newton	N	1 N = 1 kg.m/s ²
Energy	joule	J	1 J = 1 N.m
Power	watt	W	1 W = 1 J/s
Flux	weber	Wb	1 Wb = 1 V.s
Flux density	tesla	T	1 T = 1 Wb/m ²
Frequency	hertz	Hz	1 Hz = 1 c/s (s ⁻¹)
Electric conductance	siemens	S	1 S = 1 A/V
Electromotive force	volt	V	1 V = 1 W/A
Pressure, stress	pascal	Pa	1 Pa = 1 N/m ²

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